07.0 CONSTRUCTION SYSTEMS I

Prerequisite: Fundamentals of Technology
Construction Systems I is designed to introduce classical and contemporary elements, principles and processes of structural systems. Architectural and engineering subjects are studied through research, design, project development and assessment. Students explore the relationship of materials, form, function, and culture of notable past and present structures through practical applications and modeling techniques.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Construction Systems I

IDAHO CODE NUMBER: TE 1920

07.01 Demonstrate proper and safe procedures while working with technological tools, apparatus, equipment, systems, and materials.

07.02 Demonstrate interpersonal skills as they relate to the workplace.

07.03 Identify and apply methods of information acquisition and utilization.

07.04 Apply basic skills in communications, mathematics, and science appropriate to technological content and learning activities.

07.05 Demonstrate and apply design/problem-solving processes.

07.06 Express an understanding of technological systems and their complex interrelationships.

07.07 Demonstrate the ability to properly identify, organize, plan, and allocate resources.

07.08 Discuss individual interests and aptitudes as they relate to a career.

07.09 Demonstrate employability skills and habits.

07.10 Demonstrate an understanding of entrepreneurship.

07.11 Make an informed and meaningful career choice.

07.12 Demonstrate technological literacy about construction systems.

07.13 Exhibit positive human relations and leadership skills.

07.14 Demonstrate computer application and literacy.

07.15 Demonstrate and apply design/problem-solving processes.

07.16 Demonstrate technological literacy.

07.17 Display an understanding and appreciation for the dignity and worth of honest labor.

07.18 Discuss individual interests and aptitudes as they relate to a career.

07.19 Demonstrate evolving construction technologies.

07.20 Perform special skills unique to construction technology.

07.21 Express knowledge of factors that impact on construction technology and practices.

07.22 List requisites and career opportunities for employment in construction technology.

07.23 Demonstrate work common to residential, commercial and civil construction technology.

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07.01 DEMONSTRATE PROPER AND SAFE PROCEDURES WHILE WORKING WITH TECHNOLOGICAL TOOLS, APPARATUS, EQUIPMENT, SYSTEMS, AND MATERIALS --
The student will be able to:

1. Follow laboratory safety rules and procedures.
2. Demonstrate good housekeeping at work station within total laboratory.
3. Conduct laboratory activities and equipment operations in a safe manner.
4. Exercise care and respect for all tools, equipment, and materials.
5. Identify color-coding safety standards.
6. Safely use hand tools and power equipment.
7. Explain fire prevention and safety precautions and practices for extinguishing fires.

8. Identify harmful effects/potential dangers of familiar hazardous substances/devices to people and the environment.

07.02 DEMONSTRATE INTERPERSONAL SKILLS AS THEY RELATE TO THE WORKPLACE--
The student will be able to:

1. Perform roles in a student personnel system or in the Idaho Technology Student Association (ID-TSA).
2. Participate as a member of a team.
3. Teach others new skills.
4. Identify skills needed to serve clients/customers.
5. Demonstrate leadership skills.
6. Describe strategies necessary for negotiating agreements.
7. Demonstrate the application of skills necessary to work with people of diverse backgrounds.
8. Form an understanding and appreciation for work after listening to or observing technology workers.
9. Form an understanding and appreciation for work after participating in a simulated technology group project in the laboratory.
10. Form an understanding and appreciation for the roles and work of co-workers.

07.03 IDENTIFY AND APPLY METHODS OF INFORMATION ACQUISITION AND UTILIZATION-

The student will be able to:

1. Define terms related to computers.
2. Identify and describe methods of information acquisition and evaluation.
3. Discuss advantages and disadvantages in the application of technologies.
4. Produce a plan to organize and maintain information relevant to emerging technologies.
5. Comprehend and communicate information relevant to emerging technologies.
6. Demonstrate the use of computers to process information.

07.04 APPLY BASIC SKILLS IN COMMUNICATIONS, MATHEMATICS, AND SCIENCE APPROPRIATE TO TECHNOLOGICAL CONTENT AND LEARNING ACTIVITIES--
The student will be able to:

1. Identify and explain the main and subordinate ideas in a written work.
2. Distinguish different purposes and methods of writing, identify a writer's point of view and tone, and interpret a writer's meaning.
3. Define unfamiliar words by use of structural analysis, decoding, contextual clues, or by using a dictionary.

4. Distinguish fact from opinion.
5. Read critically by asking pertinent questions, by recognizing assumptions and implications, and by evaluating ideas.
6. Select, relate, and organize, ideas using outlining and/or graphic organizers, and develop the ideas in coherent paragraphs.
7. Improve one's own writing by restructuring, correcting errors, and rewriting.
8. Gather and organize information from primary and secondary sources; write a report using this research; quote, paraphrase, and summarize accurately; and cite sources properly.
9. Vary one's writing style, including vocabulary and sentence structure, for different readers and purposes.
10. Write logical and understandable statements, or phrases, to accurately fill out commonly used forms.
11. Compose unified and coherent correspondence, directions, descriptions, explanations and reports.
12. Participate critically and constructively in the exchange of ideas, particularly during class discussions and conferences with instructors.
13. Conceive and develop ideas about a topic for the purpose of speaking to a group; choose and organize related ideas; present them clearly in Standard English; and evaluate similar presentations by others.
14. Use the mathematics of:
    - integers, fractions, and decimals;
    - ratios, proportions, and percentages;
    - roots and powers;
    - algebra;
    - geometry.
15. Make estimates and approximations, and judge the reasonableness of a result.
16. Use elementary concepts of probability and statistics.
17. Draw, read, and analyze graphs, charts, and tables.
18. Ask appropriate scientific questions and recognize what is involved in experimental approaches to the solutions of such questions through familiarity with laboratory and field work.
19. Organize and communicate the results obtained by observation and experimentation.
20. Apply the basic principles of biology, physics, and chemistry (properties of matter; structure of compounds; concepts of motion; temperature, pressure and volume; work, power, force and energy; machines; human cell structure).
21. Identify problems rooted in basic biology, physics, or chemistry (effects of hazardous materials on health and safety, effects of drugs on health, trouble shooting problems on a machine).

07.05 DEMONSTRATE AND APPLY DESIGN/PROBLEM-SOLVING PROCESSES--
The student will be able to:

1. Describe and explain steps in the design/problem-solving process.
2. Propose solutions to given problems.
3. Design and implement the optimal solution to a given problem.
4. Document each step of the design/problem-solving process.
5. Demonstrate "Brainstorming" as a process to solve problems.
6. Define "critical thinking" and its value in the problem-solving process.

07.06 EXPRESS AN UNDERSTANDING OF TECHNOLOGICAL SYSTEMS AND THEIR COMPLEX INTERRELATIONSHIPS--
The student will be able to:

1. Demonstrate knowledge of how social, organizational, and technological systems work.
2. Explore methods used to monitor and correct performance of technological systems.
3. Design and implement an optimal solution to a given problem.
4. Outline major historical technological developments or events.
5. Identify recent advances in technology.
6. Explain problem-solving roles of technology.
7. Forecast a technological development or event.
8. Define technology.

07.07 DEMONSTRATE THE ABILITY TO PROPERLY IDENTIFY, ORGANIZE, PLAN, AND ALLOCATE RESOURCES--
The student will be able to:

1. Demonstrate the ability to select goal-relevant activities, rank them, allocate time, and prepare and follow schedules.
2. Use or prepare budgets, make forecasts, keep records, and make adjustments to meet objectives.
3. Demonstrate the ability to acquire, store, allocate, and use materials or space efficiently.
4. Display knowledge of the efficient use of human resources.

07.08 DISCUSS INDIVIDUAL INTERESTS AND APTITUDES AS THEY RELATE TO A CAREER--
The student will be able to:

1. Describe individual strengths and weaknesses.
2. Discuss individual interests related to a career.
3. Identify careers within specific areas of technology.
4. Explore careers within specific areas of interest.

07.09 DEMONSTRATE EMPLOYABILITY SKILLS AND HABITS--

The student will be able to:

1. Identify employment opportunities.
2. Apply employment seeking skills.
3. Interpret employment capabilities.
4. Demonstrate appropriate work behavior.
5. Maintain safe and healthy environment.
6. Maintain businesslike image.
7. Maintain working relationships with others.
8. Communicate on the job.
9. Adapt to change.
10. Demonstrate knowledge of manufacturing.
11. Perform mathematical calculations.
12. Compile a portfolio.

07.10 DEMONSTRATE AN UNDERSTANDING OF ENTREPRENEURSHIP--
The student will be able to:

1. Define entrepreneurship.
2. Describe the importance of entrepreneurship to the American economy.
3. List the advantages and disadvantages of business ownership.
4. Identify the risks involved in ownership of a business.
5. Identify the necessary personal characteristics of a successful entrepreneur.
6. Identify the business skills needed to operate a small business efficiently and effectively.

07.11 MAKE AN INFORMED AND MEANINGFUL CAREER CHOICE--
The student will be able to:

1. Make a tentative occupational choice based on the information learned and interest developed in this course.
2. Review tentative occupational choices based on the information learned and interest developed in this course.

07.12 DEMONSTRATE TECHNOLOGICAL LITERACY ABOUT CONSTRUCTION SYSTEMS--
The student will be able to:

1. Define construction technology.
2. Outline major technological developments and events in the history of construction systems technology.
3. Identify recent advances in construction technology.
4. Forecast a development or event in construction technology.

07.13 EXHIBIT POSITIVE HUMAN RELATIONS AND LEADERSHIP SKILLS--
The student will be able to:

1. Perform roles in a student personnel system or in the Idaho Technology Student Association (ID-TSA).
2. Work cooperatively with others.

07.14 DEMONSTRATE COMPUTER APPLICATION AND LITERACY--
The student will be able to:

1. Define terms related to computer parts and usage.
2. List ways in which computers are used in technology.
3. Discuss advantages and disadvantages in the use of computers.
4. Demonstrate the application of a computer.

07.15 DEMONSTRATE AND APPLY DESIGN/PROBLEM-SOLVING PROCESSES--
The student will be able to:

1. Describe and explain steps in the design/problem-solving process.
2. Propose solutions to given problems.
3. Design and implement the optimal solution to a given problem.

07.16 DEMONSTRATE TECHNOLOGICAL LITERACY--
The student will be able to:

1. Outline major historical technological developments or events.
2. Identify recent advances in technology.
3. Explain problem-solving roles of technology.
4. Forecast a technological decision.
5. Make a technological decision.
6. Define technology.

07.17 DISPLAY AN UNDERSTANDING AND APPRECIATION FOR THE DIGNITY AND WORTH OF HONEST LABOR--
The student will be able to:

1. Form an understanding and appreciation for work after listening to or observing technology workers.
2. Form an understanding and appreciation for work after participating in a simulated technology group project in the laboratory.
3. Form an understanding and appreciation for the roles and work of co-workers.

07.18 DISCUSS INDIVIDUAL INTERESTS AND APTITUDES AS THEY RELATE TO A CAREER--
The student will be able to:

1. Describe individual strengths and weaknesses.
2. Discuss individual interests related to a career.
3. Identify careers within specific areas of technology.
4. Explore careers within specific areas of interest.

07.19 DEMONSTRATE EVOLVING CONSTRUCTION TECHNOLOGIES--
The student will be able to:

1. List evolving technologies in construction.
2. Demonstrate evolving technology in construction, i.e. 1) modular, 2) geodesic dome, 3) manufactured, 4) non-combustible.

07.20 PERFORM SPECIAL SKILLS UNIQUE TO CONSTRUCTION TECHNOLOGY--
The student will be able to:

1. Interpret construction plans and blueprints.
2. Identify construction materials.
3. Apply carpentry skills.
4. Apply plumbing skills.
5. Apply electrical wiring skills.
6. Apply masonry skills.
7. Describe or demonstrate the construction skills of plastering, roofing, and finishing.

07.21 EXPRESS A KNOWLEDGE OF FACTORS THAT IMPACT ON CONSTRUCTION TECHNOLOGY AND PRACTICES--
The student will be able to:

1. Explain economic factors that impact on construction technology.
2. Research and identify types and styles of construction desired by consumers.

3. List sources of raw materials and standard stock materials available to construction technology.
4. Express knowledge of construction technology labor organizations and hiring practices.

07.22 LIST REQUISITES AND CAREER OPPORTUNITIES FOR EMPLOYMENT IN CONSTRUCTION TECHNOLOGY--
The student will be able to:

1. List occupations, job requirements, and employment opportunities in construction technology.
2. List occupational training programs and academic programs and academic programs at the postsecondary levels in construction technologies.

07.23 DEMONSTRATE WORK COMMON TO RESIDENTIAL, COMMERCIAL AND CIVIL CONSTRUCTION TECHNOLOGY--
The student will be able to:

1. Identify kinds of work related to construction technologies.
2. Demonstrate semi-skilled, skilled, and professional levels of work in construction technology.